

In the Specification:

Please amend the paragraph beginning on page 1, line 5 as follows:

The present invention relates to a dispenser to be used for the production of a DNA chip (DNA microarray) in which several thousands to not less than ten thousands kinds of different types of DNA fragments are aligned and fixed as minute spots at a high density on a base plate such as a microscopic slide-glass slide, and a method for producing a DNA chip by using the dispenser.

Please amend the paragraph beginning on page 1, line 12 as follows:

Description of the Related Art:

The method for analyzing the genetic structure has been remarkably progressed in recent years. A large number of genetic structures represented by those of the human genome have been clarified. The analysis of the genetic structure as described above uses a DNA chip (DNA microarray) in which several thousands to not less than ten thousands kinds of different types of DNA fragments are aligned and fixed as spots on a base plate such as a microscopic slide-glass slide.

Please amend the paragraph beginning on page 2, line 19 as follows:

The pin & ring system lies in a method in which a sample solution in a microplate is reserved with a ring, and then the sample in the ring is trapped by a pin tip so that the pin tip penetrates through the inside of the ring reserved with the solution to form a spot on the base plate. However, the sample, which can be reserved once, depends on the number of rings. Conventionally, the number of rings can not be increased. For this reason, in order to form several thousands to several tens of thousands of sample minute sample spots, it is also necessary to perform washing and drying steps several hundreds to several thousands of times. Therefore, it is difficult to say that the productivity is necessarily high.

Please amend the paragraph beginning on page 3, line 21 as follows:

On the other hand, a method is also investigated by using the so-called ink-jet system which is practically used for printers. However, many tasks arise concerning the size and the cost when several thousands to several tens of thousands of individual flow passages corresponding to every sample are formed. Further, in the case of the ink-jet system, it is necessary to previously charge the sample in a pump before the spotting so that no bubble is formed. For this reason, the large amount of sample is required ~~in a large amount~~ to effect the purge. Therefore, the efficiency of the use of the sample is extremely inferior. In general, in order to remove the bubble, it is preferable to move the liquid at a high speed in the flow passage including a pump chamber. As a result, the sample is agitated in the flow passage. When a delicate DNA solution is used as a sample, for example, DNA is damaged in some cases.

Please amend the paragraph beginning on page 4, line 11 as follows:

SUMMARY OF THE INVENTION

The present invention has been made taking the foregoing problems into consideration, an object of which is to provide a dispenser which comprises a large number of micropipettes arranged to make it possible to form minute spots accurately at a high speed, which makes it possible to supply a solution to the respective micropipettes quickly and reliably, and which makes it possible to smoothly perform the steps from the supply of the solution to the supply onto a base plate.

Please amend the paragraph beginning on page 4, line 26 as follows:

According to the present invention, there is provided a dispenser comprising a plurality of arranged micropipettes each including a pouring port for pouring a sample solution from the outside, a cavity for pouring and charging the sample solution thereinto, and

a discharge port for discharging the sample solution, formed on at least one or more substrates; ^t The micropipette further includingincludes a piezoelectric/electrostrictive element disposed on at least one wall surface of the substrate which forms the cavity so that the sample solution is movable in the cavity, and the sample solution beingis discharged from the discharge port of each of the micropipettes; wherein a pin, which protrudes upwardly, is provided at the pouring port of each of the micropipettes.

Please amend the paragraph beginning on page 5, line 13 as follows:

According to another aspect of the present invention, there is provided a method for producing a DNA chip, comprising the steps of using a dispenser comprising a plurality of arranged micropipettes each including a pouring port for pouring a sample solution from the outside, a cavity for pouring and charging the sample solution thereinto, and a discharge port for discharging the sample solution, formed on at least one or more substrates; ^t The micropipette further includingincludes a piezoelectric/electrostrictive element disposed on at least one wall surface of the substrate which forms the cavity so that the sample solution is movable in the cavity; and discharging the sample solution onto a base plate from the discharge port of each of the micropipettes to produce the DNA chip; wherein the dispenser to be used is provided with a pin protruding upwardly at the pouring port of each of the micropipettes.

Please amend the heading on page 16, line 16 as follows:

Q10 DETAILED DESCRIPTION OF THE INVENTION PREFERRED EMBODIMENTS

Please amend the paragraph beginning on page 28, line 18 as follows:

In the first and second methods, it is also preferable to provide a mechanism for washing the space ranging from the sample-pouring port 52 to the sample discharge port 54 formed in the

substrate 50 of each of the micropipettes 34. In this arrangement, for example, several thousands

to several tens of thousands of types or many kinds of DNA fragments are discharged as the minute spots 80 with good purity without involving any contamination, which is preferred.

All
